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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/578,327	04/27/2006	Martin Theodoor de Groot	820614-1010	5725

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7590

09/03/2009

EXAMINER
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DYE, ROBERT C

ART UNIT	PAPER NUMBER
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1791

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/578,327	<b>Applicant(s)</b> DE GROOT, MARTIN THEODOOR	
	<b>Examiner</b> ROBERT DYE	<b>Art Unit</b> 1791	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 05 May 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,2,4-6,8-10 and 12-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_\_ is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 April 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

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### **DETAILED ACTION**

1. This is a Final Office action in response to Applicant's reply, dated 5/05/2009, to a Non-Final Office Action. Claims 1, 2, 4-6, 8-10, 12-14.

#### ***Claim Objections***

2. Claim 1 is objected to because of the following informalities: line 10, "fiber-reinforced" is misspelled, should be --fiber-reinforced--. Appropriate correction is required.

#### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

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5. Claim 1, rejected under 35 U.S.C. 103(a) as being unpatentable over van Dreumel (USP 5,536,344, of record) in view of DE20105550 (of record, with English machine translation) and Spengler (USP 6,287,678).
6. Regarding claim 1, 2, 4, 5, 8, 9, 10 and 12 van Dreumel teaches a method of arranging a thermoplastic insert unit comprising a body and flange having a larger cross-section than the body in a thermoplastic sandwich product having a substantially planar section comprising a core material and fiber-reinforced thermoplastic skin (col 3, line 7). The method comprises forming a hole having a cross-section smaller than the flange (abstract), placing the thermoplastic insert unit into the hole, applying frictional heat and pressure to the insert such that insert and skin panels are fused together, and allowing the weld to set before removing the tooling (col 4, lines 1-13).
7. Van Dreumel does not teach a method wherein ultrasonic welding is employed to fuse the insert and panel. In the same field of endeavor of attaching plastic inserts to a plastic panel, DE20105550 (hereinafter '550) discloses a method wherein a flanged plastic 12a insert is ultrasonically welded to a plastic panel 6 by placing the insert between a horn (sonotrode 2) and an anvil (rest 4) and applying ultrasonic energy and pressure (abstract). Ultrasonic welding relies upon the ultrasonic vibrations to create heat between the two plastic parts due to the friction of vibration. This heat in turn welds the two plastic parts together. This relies upon a similar concept as van Dreumel which also generates heat by the friction caused by the rotation of the insert against the panel. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the ultrasonic welding of '550 in the method taught by van Dreumel because one

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of ordinary skill in the art would have been able to carry out such a substitution to achieve the predictable result of welding the insert to the panel. “The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” *KSR Int’l Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 82 USPQ2d 1385 (2007).

8. The combination of van Dreumel and ‘550 still does not teach a panel wherein the core is made from thermoplastic foam. Van Dreumel discloses the sandwich panel as comprising resin sheets bonded to a core, for example, thin metal ribbing (col 3, lines 4). Van Dreumel does not limit the core material to metal honeycombs and sandwich panels comprising a core of thermoplastic foam are well known in the art as evidenced by Spengler which discloses a composite structural panel having a thermoplastic foam core between two fiber-reinforced skins (abstract) Spengler teaches the foam core coupled with the skin provides high strength, rigidity and high strength to weight ratio. It would have been obvious to a person having ordinary skill in the art at the time of the invention to employ a foam core, since it has been held to be within the ordinary skill of a worker in the art to select a known material on the basis of its suitability for the intended use. One would have been motivated to use a foam core for its high strength to weight ratio.

9. Regarding claim 2, van Dreumel teaches a panel comprising two fiber-reinforced skins about a core (col 3, lines 5-7). Although van Dreumel does not expressly teach a foam core, the use of a foam core is known in the art and it would be obvious to employ

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such a foam core for reasons noted above (Spengler discloses a thermoplastic foam core within two fiber-reinforced skins, which provides a high strength panel).

10. Regarding claim 4, van Dreumel teaches that a hole is cut into the panel of a size to receive the body of an insert unit (col 1, lines 55-57, see Fig. 2-4).

11. Regarding claim 5, van Dreumel teaches that ideally, the dimension of the thickness of the panel is matched with the height of the insert to permit thermal welding of the insert to the bottom skin (col 3, lines 30-34).

12. Regarding claim 8, van Dreumel teaches that a hole (recess) is cut into the panel before the insert is placed (col 1, lines 55-57).

13. Regarding claim 9, cutting a recess into the panel is considered to deform the panel in some form. Drilling would impose deformation stresses on the material being removed.

14. Regarding claim 10, the limitation reciting the use of an additional fiber-reinforced thermoplastic layer is broad. The examiner wishes to point out that the independent claim only requires one thermoplastic skin layer be present. A sandwich panel described by the above combination has two skin layers. The top skin layer can be recessed while the bottom skin layer can be considered as the "additional fiber reinforced layer" which does provide reinforcement for the recess in the top layer.

15. Regarding claim 12, van Dreumel teaches that when the weld is set (thus cooled), the tooling is removed (tooling applies the pressure). Thus, the weld is cooled under pressure. Further, it would have been obvious to a person having ordinary skill in

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the art to ensure that the weld is fully set before allowing movement of the insert; otherwise a misaligned weld could be expected to result.

16. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over van Dreumel (USP 5,536,344, of record) in view of DE20105550 (of record, with English machine translation) and Spengler (USP 6,287,678) as applied to claim 5 above, and further in view of Gorski (USP 4,265,688, of record).

17. Regarding claim 13, the combination does not teach a method wherein less than 90% of the material is removed. In the same field of endeavor of attaching inserts to sandwich panels, Gorski teaches a method wherein a depression is made in a sandwich panel by using an ultrasonic tool (panel is noted as having a honeycomb core but said core is filled with thermoplastic foam) (col 4, lines 11-37). After forming said depression, a flanged insert is ultrasonically welded into the panel. Gorski teaches that the depression can be formed in a single working step and can provide a depression without rotational symmetry when thermoplastic foam is employed at the insert location (col 4, line 19). It would be expected that the melting of the foam via an ultrasonic tool would result in considerably less material, less than 90%, being removed. It would have been obvious to a person having ordinary skill in the art to employ the ultrasonic tool to form a depression as taught by Gorski in the method of van Dreumel (combined) for the purpose of forming a non-rotationally symmetric depression in a single step.

***Allowable Subject Matter***

18. Claims 6 and 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

19. The following is a statement of reasons for the indication of allowable subject matter:

20. Regarding claim 6, the prior art of record discloses methods for forming holes in a composite panel but does not teach a method wherein the location is notched, a hole is formed in the thermoplastic foam, and the covering layer is folded into the hole. Van Dreumel teaches that a hole is cut via drill but does not teach or suggest notching the layer and then folding the skin layer into the hole.

21. Regarding claim 14, the prior art of record discloses methods for forming holes in a composite panel but does not teach a deformation method employing a deformation and consolidation stamp. The prior art teaches forming holes via drill (van Dreumel) and ultrasonic tool (Gorski) but does not teach or suggest using a deformation/consolidation stamp sequence as claimed.

***Response to Arguments***

22. Applicant's arguments with respect to claim 1 and 10 have been considered but are moot in view of the new ground(s) of rejection as necessitated by the amended claim language.



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23. Regarding the arguments in response to the previous rejection by Rinse and supposed lack of foam core, the examiner wishes to point out that Rinse does in fact teach that that "the invention relates to a method of securing a thermoplastic insert in a structural sandwich panel which panel has two outer skins from thermoplastic material and an intermediate layer of foam or honeycomb material" (col 1, line 10-12). Thus, Rinse does teach that foam can be used as a core material. The examiner also reiterates that thermoplastic foam is well known in the art a core material as evidenced by the express teaching by Spengler.

24. Additionally, the application of pressure during ultrasonic welding is intrinsic as the method requires that the two parts be pressed together to facilitate welding (Rinse also expressly states this; col 4, line 31).

25. Regarding arguments on claim 10, the previous claim language did not state an additional layer, only that a reinforcing layer be present (the original sandwich skin was present in the recess of the applied rejection). A new ground of rejection in view of the amended claim language has been applied.

### ***Conclusion***

26. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROBERT DYE whose telephone number is (571)270-7059. The examiner can normally be reached on Monday to Friday 8:00AM to 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph S. Del Sole can be reached on (571)272-1130. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/RCD/

/Joseph S. Del Sole/

Supervisory Patent Examiner, Art Unit 1791